

AMENDMENTS TO THE CLAIMS

5 Claims pending at the time of the 12/14/04 Office Action: 1-32
 Claims pending as a result of the present communication: 1-29
 Cancelled claims: 30-32
 New claims: none

10 Please amend the claims of the present application as set forth below.

1. (Currently amended) A print head die forming method comprising:
 forming a plurality of fluid-handling passageways and ejection chambers
 over a first surface of a substrate;

15 subsequent to said forming a plurality of fluid-handling passageways and
 ejection chambers, forming a first patterned masking layer sufficient to expose a
 desired area of a ~~first~~ second generally opposing surface of [[a]] the substrate;
 after forming the first patterned masking layer, forming a second patterned
 masking layer sufficient to expose less than the entirety of the desired area of the
20 first surface;

forming a slot portion in the substrate through the second patterned masking layer; and,

removing additional substrate material to form a fluid-handling slot
sufficient to supply fluid from the second surface through the substrate to the
5 first surface and the fluid handling passageways.

2. (Original) The method of claim 1, wherein said act of forming a first patterned masking layer comprises forming a hard mask.

10 3. (Original) The method of claim 1, wherein said act of forming a second patterned masking layer comprises forming a photo-resist layer.

4. (Original) The method of claim 1, wherein said act of forming a slot portion comprises etching the slot portion.

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5. (Original) The method of claim 1, wherein said act of removing forms a fluid-handling slot having a through region positioned between two shallow regions.

20 6. (Original) The method of claim 1, wherein said act of removing comprises wet etching the additional substrate material.

7. (Original) The method of claim 1 further comprising, after said act of forming a slot portion and before removing the additional substrate material, removing a portion of the second patterned masking layer.
- 5 8. (Original) A print cartridge incorporating a print head die formed in accordance with the method of claim 1.
9. (Currently amended) A fluid-feed slot forming method comprising:
forming a plurality of fluid-handling passageways and ejection chambers
10 over a first substrate surface;
subsequent to said forming a plurality of fluid-handling passageways and
ejection chambers over a first substrate surface, patterning a hard mask on a first
generally opposing second substrate surface sufficient to expose a first area of
the first surface;
- 15 forming a slot portion in the substrate through less than an entirety of the
first area of the first surface, the slot portion having a cross-sectional area at the
first surface that is less than a cross-sectional area of the first area; and,
after forming the slot portion, etching the substrate to remove material
from within the first area to form a fluid-handling slot between the first and
20 second surfaces sufficient to supply fluid to the fluid-handling passageways.
10. (Original) The method of claim 9, wherein said act of forming a slot

portion forms a slot portion having a cross-sectional area that comprises a subset of the first area.

11. (Currently amended) The method of claim 9, wherein said act of
5 patterning a hard mask comprises covering the entire ~~first~~ second substrate surface with the hard mask and subsequently removing hard mask material from the first area of the surface.

12. (Original) A print cartridge incorporating a substrate formed in accordance
10 with the method of claim 9.

13. (Currently amended) A print head substrate forming method comprising:
forming a plurality of fluid-handling passageways and ejection chambers
over a first substrate surface;
15 subsequent to said forming a plurality of fluid-handling passageways and
ejection chambers, exposing a first portion of a second generally opposing
substrate surface through a hard mask;

forming a photoresist over the hard mask and the first portion;
removing at least some of the photoresist to expose a second portion of
20 the substrate surface through which a slot portion is to be formed;

dry etching the substrate through the photoresist sufficient to form the slot portion; and,

after said dry etching, wet etching the substrate to form a fluid-handling slot through the substrate to supply fluid received at the second surface through the substrate and to the fluid-handling passageways and ejection chambers.

- 5 14. (Original) The method of claim 13, wherein said act of exposing comprises applying a hard mask over the entire substrate surface and removing hard mask material from over the first portion.
- 15 15. (Original) The method of claim 13, wherein said act of removing exposes
10 a second portion that comprises a subset of the first portion.
16. (Original) The method of claim 13, wherein said act of removing exposes a second portion having an area that is less than an area of the first portion.
- 15 17. (Original) The method of claim 13, wherein said act of exposing comprises forming a hard mask over less than an entirety of the first surface.
18. (Original) The method of claim 13, wherein said act of wet etching comprises anisotropically etching the slot.
- 20 19. (Original) The method of claim 13, wherein said act of dry etching comprises alternating acts of etching and passivating.

20. (Original) A print cartridge incorporating a print head die formed in accordance with the method of claim 13.

5 21. (Currently amended) A print head forming method comprising:

forming a fluid-handling slot ~~in~~ extending between a thin-film surface of a
substrate and a generally opposing backside surface of the substrate, the slot
~~having~~ extending along a long axis that lies generally parallel to the thin-film
surface, wherein the slot has a cross-section taken transverse the long axis that is
10 defined, at least in part, by one sidewall, wherein at least a first portion of the one
sidewall is generally parallel to ~~a first~~ the thin-film surface of the substrate, and
wherein a second portion of the one sidewall is generally perpendicular to the
~~first~~ thin-film surface, and wherein a third portion of the sidewall extends from
the second portion to the thin-film surface of the substrate and defines an obtuse
15 angle with the second portion as measured through the slot.

22. (Currently amended) The method of claim 21, wherein said act of forming
a fluid-handling slot in a substrate comprises:

forming a slot portion into ~~a first~~ the backside surface of ~~[[a]]~~ the
20 substrate; and,

etching the substrate to remove substrate material proximate the slot
portion to form ~~[[a]]~~ the fluid-handling slot.

23. (Original) The method of claim 22, wherein said act of forming a slot portion comprises one or more of: laser machining and mechanically cutting.

5 24. (Original) The method of claim 22, wherein said act of forming a slot portion comprises multiple removal steps.

25 (Original) The method of claim 24, wherein at least one of the multiple removal steps comprises dry etching.

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26. (Original) The method of claim 24, wherein at least one of the multiple removal steps comprises patterning a hard mask.

27. (Original) The method of claim 26, wherein said act of patterning a hard
15 mask comprises a lift-off process.

28. (Original) The method of claim 22, wherein said act of etching comprises wet etching.

20 29. (Original) A print cartridge incorporating a print head die formed in accordance with the method of claim 21.

30. - 32. (Cancelled).